NOTICE OF PREPARATION
DWR Perris Dam Remediation Project EIR

To: Calif. Office of Planning and Research
Responsible and Trustee Agencies
Other Interested Parties

Subject: Notice of Preparation of Environmental Impact Report

Project: Perris Dam Remediation Project

Lead Agency: Department of Water Resources

Date: June 1, 2007

This Notice of Preparation (NOP) has been prepared to notify agencies and interested parties that the Department of Water Resources (DWR) as the Lead Agency is beginning preparation of an Environmental Impact Report (EIR) pursuant to the California Environmental Quality Act (CEQA) for the proposed Perris Dam Remediation Project. Perris Dam, which impounds Lake Perris, is located 15 miles south of the City of Riverside in Riverside County approximately 65 miles east of Los Angeles. DWR has identified potential seismic safety risks in a section of the foundation of Perris Dam. There is no imminent threat to life or property. DWR is proposing to upgrade the dam by removing and replacing foundation material along a portion of the dam toe and adding a stability berm. The proposal includes installing soil-cement columns beneath some of the replaced foundation by means of deep soil mixing. In addition, DWR is proposing to replace the outlet tower and construct a new release channel to provide safe carriage of emergency drawdown flows.

DWR is soliciting the views of interested persons and agencies as to the scope and content of the environmental information to be studied in the EIR. In accordance with CEQA, agencies are requested to review the project description provided in this NOP and provide comments on environmental issues related to the statutory responsibilities of the agency. The EIR will be used by DWR when considering approval of the Perris Dam Remediation Project.

In accordance with the time limits mandated by CEQA, comments to the NOP must be received by DWR no later than 30 days after publication of this notice. We request that comments to this NOP be received no later than July 2, 2007. Please send your comments to the address shown below.

Please include a return address and contact name with your comments. Please send comments via mail or email to the address show below:

c/o Tom Barnes, ESA
707 Wilshire Boulevard, Ste. 1450
Los Angeles, CA 90017

Email: tbarnes@esassoc.com
Telephone: 213-599-4300

A public meeting will be held to receive public comments and suggestions on the project. The scoping meeting will open to the public and held at the following location:

Harrison Hall
Lake Perris Fairgrounds
18700 Lake Perris Dr.
Perris, CA 92571

Wednesday, June 20, 2007 at 5:00 pm

PROJECT LOCATION

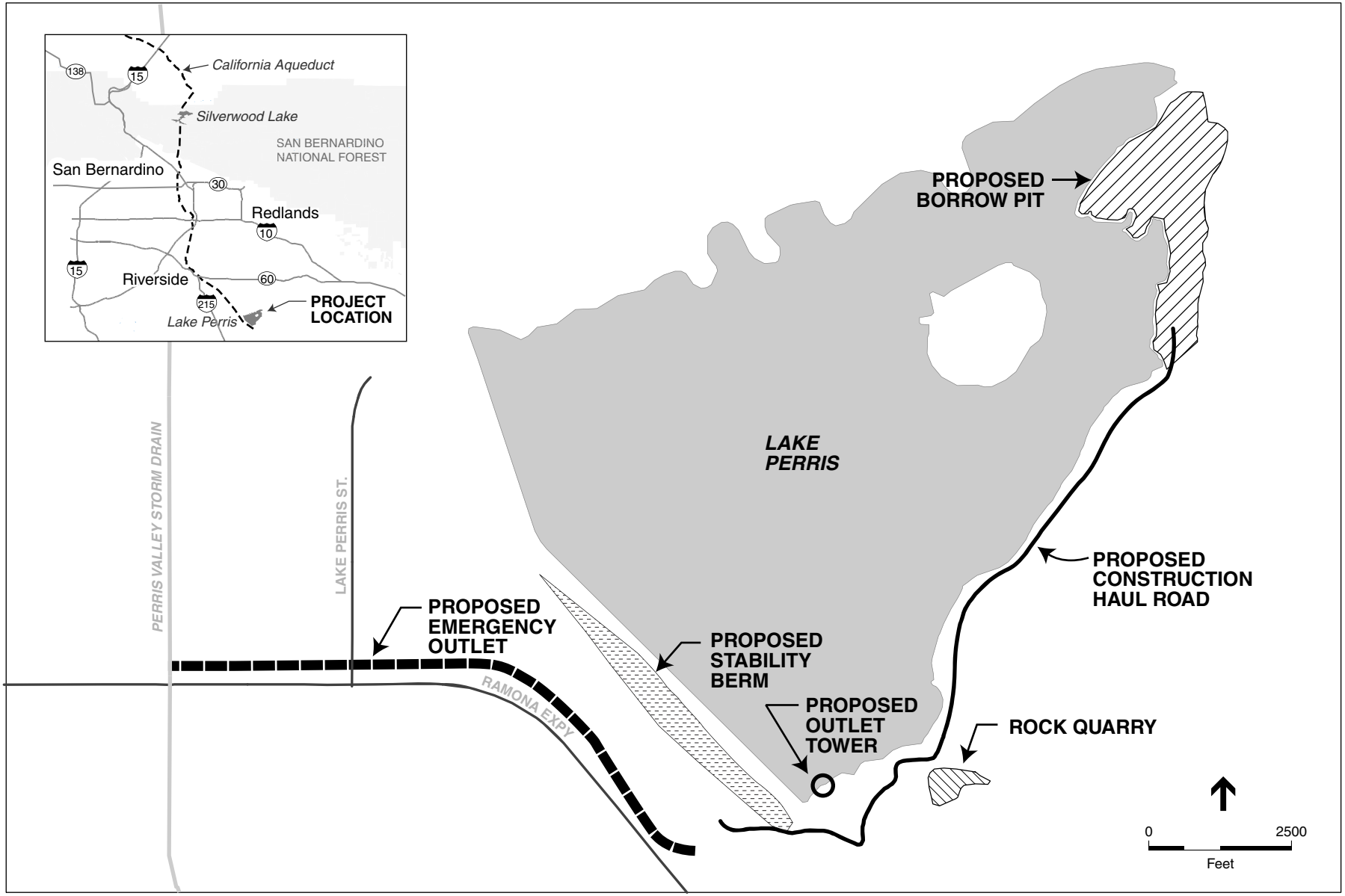
The Department of Water Resources (DWR) operates the State Water Project (SWP), which supplies water to numerous communities and millions of people throughout California. The SWP includes an extensive system of aqueducts and pipelines that convey water from the Feather River and Sacramento River watersheds through the Central Valley, terminating at Lake Perris in Riverside County (**Figure 1**). Lake Perris is entirely within the Lake Perris State Recreation Area (LPSRA) located between the cities of Moreno Valley and Perris in an unincorporated area of Riverside County, approximately 15 miles south of the City of Riverside and 65 miles east of the City of Los Angeles.

PROJECT BACKGROUND

Perris Dam is an earthfill dam completed in 1974 that impounds the Lake Perris reservoir. The dam and lake are owned and operated by DWR, in cooperation with the Metropolitan Water District of Southern California (MWDSC), which supplies water for municipal and industrial uses throughout southern California. Water is conveyed from the East Branch Aqueduct of the SWP to Lake Perris via the Santa Ana Valley Pipeline. Lake Perris has a capacity of approximately 127,000 acre-feet (af) and a surface area of 2,292 acres when filled to normal design capacity, with a pool elevation of 1,588 feet above mean sea level (AMSL).[1] The dam crest elevation is 1,600 feet AMSL. Lake Perris is a multi-purpose reservoir used for water supply, recreation, fish and wildlife habitat, and emergency water storage. The recreational opportunities at Lake Perris include swimming, boating, camping, hunting, fishing, horseback riding, hiking, rock climbing, and bird and animal watching. The LPSRA has approximately 1.1 million visitors each year.

In 2005, DWR completed a geotechnical investigation and seismic assessment of Perris Dam and concluded that the southeastern reach of the dam, (the “left reach”), is underlain by soil lenses prone to liquefaction. During strong seismic-related shaking, these soils could cause earthquake-induced deformation of the dam. The deformations could lower the dam crest enough to allow overtopping. As a safety precaution, the lake has been drawn down to a maximum elevation of 1,563 feet AMSL, resulting in a current surface area of 1,882 acres. This water level restriction results in a capacity loss of approximately 52,000 af, leaving the reservoir operating at approximately 60 percent of its normal capacity.

[1] The elevations stated in this document are based on the National Geodedic Vertical Datum of 1929 which was used for the original construction of the dam. This remediation project will use NAVD 88. The difference is about 2.5 feet.



SOURCE: Street Map USA; ESA, 2007.

DWR - Perris Reservoir NOP . 206008

Figure 1
Perris Dam
Remediation Construction Area

PROJECT OBJECTIVES

The objectives of the proposed project are as follows:

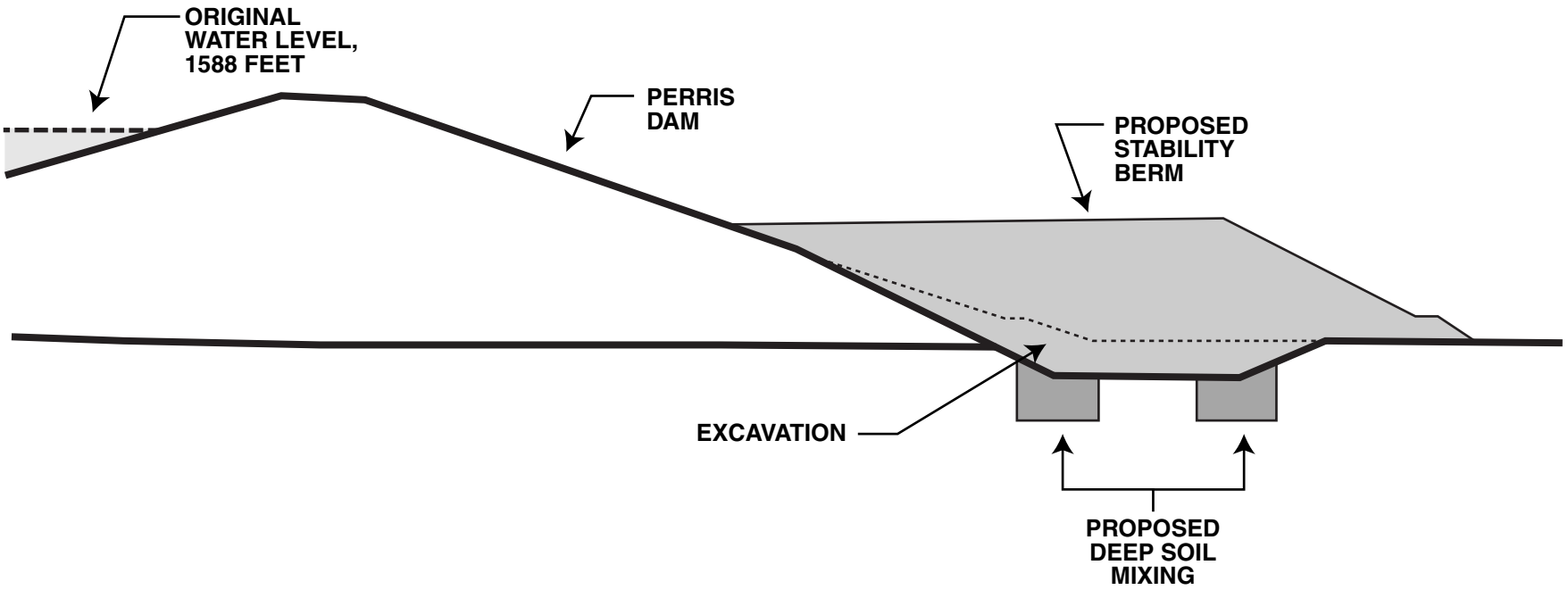
- Upgrade SWP infrastructure to meet current seismic standards in an economical and environmentally sound manner;
- Minimize the risks associated with seismic hazards;
- Enhance and restore public safety within the lake area and downstream of the dam;
- Protect, upgrade and restore the water delivery system;
- Maximize the beneficial uses of the LPSRA by restoring the reservoir to its pre-drawdown water levels.

PROJECT DESCRIPTION

The Perris Dam Remediation Project includes three separate projects as described below: (1) Perris Dam Remediation Project, (2) Outlet Tower Retrofit, and (3) Emergency Outlet Release Facility. All three projects will be constructed without draining the lake in an effort to maintain the beneficial uses of the State Recreation Area.

Perris Dam Remediation Project

Perris Dam is an earthfill embankment that is 11,600 feet long and has a maximum height of 128 feet above original ground level. The embankment contains approximately 20 million cubic yards of compacted fill. DWR proposes to seismically upgrade the dam by improving the foundation material with deep soil mixing methods, excavating the toe of the dam to remove the liquefiable foundation material, replacing it with re-compacted engineered fill, and then constructing a stability berm on top of the replaced foundation. This remediation strategy will allow Perris Lake to return to its previous maximum operating pool elevation of 1,588 feet AMSL after construction. The blocks of soil-cement columns will be installed in the deepest and most liquefiable alluvial materials beneath the replaced foundation soil, as shown in **Figure 2**. Deep soil mixing increases the stability of the soil and reduces the hazards associated with deep excavations. Following deep soil mixing, the groundwater will be lowered by an array of pumping wells to facilitate the excavation and replacement of the uppermost liquefiable soils. Re-compaction is the most reliable method for improving liquefiable soils. A stability berm will be constructed atop the re-compacted foundation along the downstream toe of the dam as shown schematically in **Figure 2**. The berm would consist of approximately 2 million cubic yards of soil and 1 million tons of rock. As shown in **Figure 1**, the soil will be excavated from within the lakebed at the east end of the lake, and the rock will be quarried from the original rock quarry south of the lake in Bernasconi Hills.



0 100

Feet

SOURCE: Department of Water Resources, 2007.

DWR - Perris Reservoir NOP . 206008

Figure 2
Perris Dam
Cross Section

To convey the soil and rock to the downstream face of the dam, a haul road will be constructed from the east side of the lake, along the lakebed on the south side of the lake, and over a low spot on the Bernasconi Hills near the dam's left abutment.

Outlet Tower Retrofit

The outlet tower, built in the early 1970s, is a 105-foot tall, freestanding structure constructed in the lake near the left abutment of the dam. The tower contains 10 hydraulically operated 72-inch valves located at each of five equally spaced levels between elevation 1,503 and 1,567 AMSL with two valves at each location. The tower was constructed of reinforced concrete and is circular in cross section with an inside diameter of 26 feet and an outside diameter of 31 feet. The tower releases water from five selected levels to a 150-inch diameter horizontal tunnel at its base. The function of the outlet facility is to convey water to MWD's delivery facility just southwest of the eastern abutment of the dam and to have the ability to release water from the lake when required during emergencies for the safety of the dam. The structural integrity of the tower was evaluated in 2006 and was found to be deficient in shear capacity under current seismic loading which can cause a failure of the structure.

To remediate the stability of the tower, DWR evaluated options to either retrofit the existing tower or construct a new facility on land near the current tower. DWR is proposing to construct a new tower and abandon the old tower because retrofitting the original structure was found to be not feasible. The new outlet facility would be located approximately 400 feet from the existing tower. An area on the eastern shore between the hill and the lake would be excavated and the new tower constructed using dry construction methods (**Figure 1**). Once constructed, the excavation area would be extended by removing the soil plug at the edge of the lake to form an approach channel that would connect the new outlet structure to the lake.

Emergency Outlet Release Facility

When Perris Dam was initially constructed, there was little development between the dam and the Perris Valley Storm Drain. The dam's emergency release facilities were designed and constructed to release 3,800 cubic feet per second (cfs) of water downstream of the dam, allowing the water to form its own overland channel and resulting in an inundation area of 2,700 acres. Over time, the areas downstream of the dam were developed with residential land uses that could be affected should the emergency release facilities be needed. Currently, water released from the dam in an emergency could flood downstream residents because there is no conveyance to contain or direct the emergency flows.

The existing emergency outlet facility consists of a rectangular pipe (12 feet by 6 feet), slide gate, and bulkhead, capable of releasing a maximum of 3,800 cfs. The existing emergency outlet facility does not include a conveyance structure to

contain the water once released. As currently designed, any water released from the emergency outlet would form its own overland channel. DWR is proposing to either retrofit the existing valve or add a new valve to reduce emergency releases to a maximum 1,500 cfs. DWR would also construct a new emergency outlet conveyance channel that would completely contain and convey the maximum release from the dam to the Perris Valley Storm Drain. The new channel would cover a distance of approximately two miles and would skirt the north edge of the existing Ramona Expressway. **Figure 1** identifies the proposed route of the discharge channel.

PROJECT ALTERNATIVES

Following the drawdown of Lake Perris in 2005, DWR and its water contractors evaluated options for the long-term operation of the dam and reservoir. Each evaluation took into account the three principal project areas: dam structural remediation, outlet tower retrofit, and emergency release facilities. Four major options were studied: (1) enlarging the existing dam to Elevation 1,640 feet AMSL, (2) retrofitting the existing dam to return the water level to Elevation 1,588 feet AMSL, (3) retrofitting the existing dam and modifying the storage capacity to stay at Elevation 1,563 feet AMSL, and (4) retrofitting the existing dam and modifying the storage capacity to Elevation 1,540 feet AMSL. DWR is currently proceeding with option number two above. The EIR will describe the alternatives considered and explain the screening criteria that were used to select the preferred alternative.

DISCUSSION OF IMPACTS

The EIR will assess the physical changes to the environment that would likely result from construction and operation of the Perris Dam Remediation Project, including direct, indirect and cumulative impacts. Potential impacts of the proposed project are summarized below. The EIR will identify mitigation measures if necessary to minimize potentially significant impacts of the proposed project.

Aesthetics

The aesthetic qualities of the project areas, which lie entirely within the Lake Perris State Recreation Area (LPSRA), include both natural and human-dominated features. The recreation area includes the 2,300 acre reservoir and 6,000 acres of the neighboring Russell Mountains and Bernasconi Hills. The park attracts over a million visitors annually for its water recreation and surrounding natural beauty. The proposed project would permanently alter the dam and outlet tower area. However, the character and visual conditions of the LPSRA would not change significantly. Local aesthetics may be temporarily impacted during construction. The EIR will evaluate the proposed project for impacts related to aesthetic resources, including consistency of the project with the Riverside County General Plan, local ordinances and state and federal regulations.

Air Quality and Global Warming / Climate Change

The proposed project is located within the South Coast Air Basin. Construction of the proposed project would generate emissions from construction equipment exhaust, earth movement, construction workers' commute, and material hauling. The EIR will evaluate the effects of construction activities on air quality as well as potential impacts on global warming and climate change. The EIR will develop mitigation measures if necessary to reduce the level of impact.

Biological Resources

The LPSRA encompasses a variety of wildlife habitats and is home to a wide diversity of plant and animal species. The project area includes important desert and riparian habitat for several threatened or endangered species including, but not necessarily limited to, the Stephens kangaroo rat (*Dipodomys stephensii*), the Least Bell's vireo (*Vireo bellii pusillus*) and the Southwestern willow flycatcher (*Empidonax traillii extimus*). Construction of the berm may remove portions of the 30 acres of woodland/riparian vegetation located in three segments at the foot of the dam. These riparian areas currently exist due to subsurface seepage from the reservoir. Construction will avoid direct impacts to the riparian habitat located on the northeast shore of the lake. This habitat is currently being maintained with a temporary irrigation system installed to minimize adverse effects while the lake elevation is lowered. The EIR will evaluate the potential impact of the proposed project on sensitive species and critical habitats including the existing riparian vegetation. The LPSRA is identified in the Riverside County Multi-Species Habitat Conservation Plan (MSHCP) as public/quasi-public lands. The EIR will evaluate the consistency of the proposed project with the MSHCP and the Riverside County General Plan, local ordinances, and state and federal regulations. Mitigation measures will be developed if necessary to adhere to MSHCP requirements and reduce the level of impact where possible.

Cultural Resources

Six archeological sites are known to exist in the vicinity of the project area. Two additional sites are known to be currently inundated by the lake. Excavation from the borrow pit and road construction could uncover previously unknown archaeological or paleontological resources. Other historic resources may exist in the area. The EIR will assess the potential effects of the proposed project on cultural resources at Perris Dam and Lake. Mitigation measures will be developed if necessary to reduce the level of impact where possible.

Geology and Soils

The proposed project is located in a seismically active region. The objective of the project is to reduce seismic hazards posed by the dam. The remediation of Perris Dam will be subject to potential seismic hazards including soil liquefaction associated with ground shaking and potential transverse cracking of the dam. In

addition, construction activities could expose soils to increased erosion. The material used in the new berm will be mined from the lakebed and the adjacent original quarry. The EIR will summarize previous geologic and engineering studies conducted for Perris Dam to evaluate seismic and geologic hazards, and will also evaluate construction impacts to soils and unique geologic features in the region. Mitigation measures will be developed if necessary to reduce potential effects from the proposed project.

Hazards and Hazardous Materials

Excavation activities could uncover contaminated soils or hazardous substances that pose a hazard to human health or the environment. The EIR will assess the potential for encountering such hazards at Perris Dam and will develop mitigation measures if necessary to ensure that any hazards encountered during construction would be handled in accordance with applicable regulations.

Hydrology, Groundwater and Water Quality

Perris Lake affects the underlying West San Jacinto Groundwater Basin. Seepage from Perris Lake has been recognized since the dam was constructed. Seepage underneath Perris Dam has been monitored since 1973. Seepage from Perris Lake has significantly raised the local groundwater table and improved groundwater quality downstream of Perris Dam.[2] The EIR will evaluate the impact of the proposed project on surface hydrology, groundwater hydrology, and water quality and will develop mitigation measures if necessary to reduce potential effects to less than significant levels.

Land Use

The proposed project would not permanently affect or change any of the current land uses in the Lake Perris State Recreation Area (LPSRA). Temporary closures could occur along the Southeast shoreline and Bernasconi picnic areas during construction. Rock climbing and the multi-use trail leading from the climbing area could also be temporarily affected by construction. In addition, the emergency release channel would traverse a section of private land, including an existing fairgrounds and motor-cross facility, prior to reaching the Perris Valley Storm Drain. The EIR will evaluate the compatibility of the proposed project with existing and planned land uses in the region and will address strategies for mitigating disturbance to current land uses.

Noise and Light

Construction of the proposed project would generate noise that could affect residences, businesses, recreation areas, and other sensitive receptors near the project site. The EIR will evaluate the proximity of sensitive receptors to the

[2] Department of Water Resources, *Perris Dam Remediation Groundwater Study*, Project Geology Report 58-11-20, August 2006.

project site and recommend mitigation measures if necessary to ensure that the proposed project complies with local policies and ordinances to minimize noise impacts. In addition, Lake Perris and the surrounding region falls within the jurisdiction of the Mount Palomar Nighttime Lighting Policy Area. The lighting requirements protect various wildlife, birds and bats and are covered in the Riverside County General Plan. These requirements may affect night-time work and will be addressed in the EIR.

Population and Housing

Perris Dam is located in an increasingly urbanized section of Riverside County and directly above a growing population center, which includes residential housing and a school. Future population and housing growth in the area may depend upon the careful remediation of the dam. The EIR will describe population growth trends in the Perris Dam area and will assess project compatibility with local growth trends.

Recreation

LPSRA is a California State Park. The lake and neighboring Russell Mountains and Bernasconi Hills lie within park boundaries. Recreational activities at LPSRA would be affected temporarily during construction of the proposed project. However, once construction is complete, recreational activities would return to historic levels, or would even increase due to the enlarged capacity for boating, water skiing and jet skiing which result from the deepened eastern lakebed. The EIR will evaluate the effects of the proposed project on recreation at Lake Perris and surrounding areas and will develop mitigation measures if necessary to reduce impacts to less than significant levels.

Traffic and Transportation

Construction of the proposed project may temporarily affect local transportation corridors. In addition, the March Air Reserve Base has an “Airport Influence Policy Area/Safety Zone Area III” referred to in the Riverside County General Plan with a perimeter and restrictions that may affect work near the toe of the dam. The EIR will evaluate the impact of the proposed project on traffic and circulation at the project site, including restrictions imposed by the Riverside County General Plan. The EIR will develop mitigation measures if necessary to minimize any potential effects.